1. An apparatus for adaptive multimedia transmission and reception, the apparatus comprising:

a network interface;

a plurality of heterogeneous computational elements, the plurality of heterogeneous computational elements including a first computational element and a second computational element, the first computational element having a first fixed architecture and the second computational element having a second fixed architecture, the first fixed architecture being different than the second fixed architecture; and

an interconnection network coupled to the network interface and to the plurality of heterogeneous computational elements, the interconnection network operative to configure the plurality of heterogeneous computational elements for a first media functional mode of a plurality of media functional modes, in response to first configuration information, and the interconnection network further operative to reconfigure the plurality of heterogeneous computational elements for a second media functional mode of the plurality of media functional modes, in response to second configuration information, the first media functional mode being different than the second media functional mode.

2. The apparatus of claim 1, wherein the plurality of media functional modes include an acquisition mode, a traffic mode, and an idle mode.

3. The apparatus of claim 2, wherein the acquisition mode includes a channel acquisition mode and a control processing mode.

4. The apparatus of claim 2, wherein the traffic mode includes a voice reception mode, a voice transmission mode, and a control processing mode.

5. The apparatus of claim 2, wherein the traffic mode includes a data reception mode, a data transmission mode, a data processing mode, and a control processing mode.

6. The apparatus of claim 2, wherein the traffic mode includes a media reception mode, a media transmission mode, a media processing mode, and a control processing mode.

7. The apparatus of claim 2, wherein the control processing mode includes processing of a plurality of GSM control channels, the plurality of GSM control channels including a broadcast control channel (BCCH), a frequency-correction channel, a synchronization channel (SCH), a plurality of common control channels (CCCH), a slow associated control channels (SACCH), and a fast associated control channel (FACCH).

8. The apparatus of claim 1, wherein the interconnection network is further operative to configure the plurality of heterogeneous computational elements for media reception on a plurality of frequencies.

9. The apparatus of claim 1, wherein the interconnection network is further operative to configure the plurality of heterogeneous computational elements for media reception in a plurality of time division multiple access (TDMA) time slots.

10. The apparatus of claim 1, wherein the interconnection network is further operative to configure the plurality of heterogeneous computational elements for media transmission on a plurality of frequencies.

11. The apparatus of claim 1, wherein the interconnection network is further operative to configure the plurality of heterogeneous computational elements for media transmission in a plurality of time division multiple access (TDMA) time slots.

12. The apparatus of claim 1, further comprising:

a timing unit coupled to the network interface, to plurality of heterogeneous computational elements and to the interconnection network, the timing unit operative to provide synchronization and over sampling.

13. The apparatus of claim 12, wherein the timing unit is comprised of a plurality of heterogeneous computational elements and interconnection network.

14. The apparatus of claim 1, further comprising:

a memory coupled to the plurality of heterogeneous computational elements and to the interconnection network, the memory operative to store the first configuration information and the second configuration information.

15. The apparatus of claim 1, wherein the first configuration information and the second configuration information are stored in a second plurality of heterogeneous computational elements configured for a memory functional mode.

16. The apparatus of claim 1, wherein the first configuration information and the second configuration information are stored as a configuration of the plurality of heterogeneous computational elements.

17. The apparatus of claim 1, wherein the first fixed architecture and the second fixed architecture are selected from a plurality of specific architectures, the plurality of specific architectures including functions for memory, addition, multiplication, complex multiplication, subtraction, synchronization, queuing, over sampling, under sampling, adaptation, configuration, reconfiguration, control, input, output, and field programmability.

18. The apparatus of claim 1, further comprising:

a controller coupled to the plurality of heterogeneous computational elements and to the interconnection network, the controller operative to direct and schedule the configuration of the plurality of heterogeneous computational elements for the first functional mode and the reconfiguration of the plurality of heterogeneous computational elements for the second functional mode.

19. The apparatus of claim 1, further comprising:

a second plurality of heterogeneous computational elements coupled to the interconnection network, the second plurality of heterogeneous computational elements configured for a controller operating mode, the second plurality of heterogeneous computational elements operative to direct and schedule the configuration of the plurality of heterogeneous computational elements for the first functional mode and the reconfiguration of the plurality of heterogeneous computational elements for the second functional mode.

20. The apparatus of claim 1, wherein apparatus is embodied within a mobile station having a plurality of operating modes.

21. The apparatus of claim 18, wherein the plurality of operating modes of the mobile station includes mobile telecommunication, personal digital assistance, multimedia reception, mobile packet-based communication, and paging.

22. The apparatus of claim 1, wherein a first portion of the plurality of heterogeneous computational elements are operating in the first media functional mode while a second portion of the plurality of heterogeneous computational elements are being configured for the second media functional mode.

23. A method for adaptive multimedia transmission and reception, the method comprising:

determining matrix availability of a plurality of adaptive matrices to form a plurality of available adaptive matrices;

in response to first configuration information, configuring the plurality of available adaptive matrices for a first media functional mode of a plurality of media functional modes; and

in response to second configuration information, configuring the plurality of available adaptive matrices for a second media functional mode of the plurality of media functional modes, the first media functional mode being different than the second media functional mode.

24. The method of claim 23, wherein the plurality of media functional modes include an acquisition mode, a traffic mode, and an idle mode.

25. The method of claim 24, wherein the acquisition mode includes a channel acquisition mode and a control processing mode.

26. The method of claim 24, wherein the traffic mode includes a voice reception mode, a voice transmission mode, and a control processing mode.

27. The method of claim 24, wherein the traffic mode includes a data reception mode, a data transmission mode, a data processing mode, and a control processing mode.

28. The method of claim 24, wherein the traffic mode includes a media reception mode, a media transmission mode, a media processing mode, and a control processing mode.

29. The method of claim 24, wherein the control processing mode includes processing of a plurality of GSM control channels, the plurality of GSM control channels including a broadcast control channel (BCCH), a frequency-correction channel, a synchronization channel (SCH), a plurality of common control channels (CCCH), a slow associated control channels (SACCH), and a fast associated control channel (FACCH).

30. The method of claim 23, further comprising:

configuring the plurality of available adaptive matrices for media reception on a plurality of frequencies.

31. The method of claim 23, further comprising:

configuring the plurality of available adaptive matrices for media reception in a plurality of time division multiple access (TDMA) time slots.

32. The method of claim 23, further comprising:

configuring the plurality of available adaptive matrices for media transmission on a plurality of frequencies.

33. The method of claim 23, further comprising:

configuring the plurality of available adaptive matrices for media transmission in a plurality of time division multiple access (TDMA) time slots.

34. The method of claim 23, wherein the method is embodied within a mobile station having a plurality of operating modes.

35. The method of claim 34, wherein the plurality of operating modes of the mobile station includes mobile telecommunication, personal digital assistance, multimedia reception, mobile packet-based communication, and paging.

36. The method of claim 23, wherein a first portion of the plurality of available adaptive matrices are operating in the first media functional mode while a second portion of the plurality of available adaptive matrices are being configured for the second media functional mode.

37. The method of claim 23, further comprising:
configuring the plurality of available adaptive matrices for an idle mode.

38. The method of claim 23, further comprising:
configuring the plurality of available adaptive matrices for a timing mode, the timing mode providing synchronization and over sampling.

39. An adaptive integrated circuit, comprising:

configuration information;

a plurality of fixed and differing computational elements; and

an interconnection network coupled to the plurality of fixed and differing computational elements, the interconnection network operative in response to the configuration information to configure and reconfigure the plurality of fixed and differing computational elements for a plurality of media functional modes.

40. The adaptive integrated circuit of claim 39, wherein the plurality of media functional modes include an acquisition mode, a traffic mode, and an idle mode.

41. The adaptive integrated circuit of claim 40, wherein the acquisition mode includes a channel acquisition mode and a control processing mode.

42. The adaptive integrated circuit of claim 40, wherein the traffic mode includes a voice reception mode, a voice transmission mode, and a control processing mode.

43. The adaptive integrated circuit of claim 40, wherein the traffic mode includes a data reception mode, a data transmission mode, a data processing mode, and a control processing mode.

44. The adaptive integrated circuit of claim 43, wherein the traffic mode includes a media reception mode, a media transmission mode, a media processing mode, and a control processing mode.

45. The adaptive integrated circuit of claim 43, wherein the control processing mode includes processing of a plurality of GSM control channels, the plurality of GSM control channels including a broadcast control channel (BCCH), a frequency-correction channel, a synchronization channel (SCH), a plurality of common control channels (CCCH), a slow associated control channels (SACCH), and a fast associated control channel (FACCH).

46. The adaptive integrated circuit of claim 39, wherein the interconnection network is further operative to configure the plurality of fixed and differing computational elements for media reception on a plurality of frequencies.

47. The adaptive integrated circuit of claim 39, wherein the interconnection network is further operative to configure the plurality of fixed and differing computational elements for media reception in a plurality of time division multiple access (TDMA) time slots.

48. The adaptive integrated circuit of claim 39, wherein the interconnection network is further operative to configure the plurality of fixed and differing computational elements for media transmission on a plurality of frequencies.

49. The adaptive integrated circuit of claim 39, wherein the interconnection network is further operative to configure the plurality of fixed and differing computational elements for media transmission in a plurality of time division multiple access (TDMA) time slots.

50. The adaptive integrated circuit of claim 39, wherein adaptive integrated circuit is embodied within a mobile station having a plurality of operating modes.

51. The adaptive integrated circuit of claim 50, wherein the plurality of operating modes of the mobile station includes mobile telecommunication, personal digital assistance, multimedia reception, mobile packet-based communication, and paging.

52. The adaptive integrated circuit of claim 39, wherein a first portion of the plurality of fixed and differing computational elements are operating in the first media functional mode while a second portion of the plurality of fixed and differing computational elements are being configured for the second media functional mode.

53. The adaptive integrated circuit of claim 39, wherein the plurality of fixed and differing computational elements are selected from a plurality of specific architectures, the plurality of specific architectures including functions for memory, addition, multiplication, complex multiplication, subtraction, synchronization, queuing, over sampling, under sampling, adaptation, configuration, reconfiguration, control, input, output, and field programmability.